

# Epidemiological and Histological Aspects of Women Genital Cancers in Côte d'Ivoire

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## Abstract

**Genital cancers in women play an important role in cancer pathology in the developing countries. Objectives:** This study aimed at clarifying the epidemiological and histopathological aspects of woman genital cancers in Côte d'Ivoire. **Materials and Methods:** This was a retrospective and descriptive study conducted in the anatomical pathology laboratories of the university hospitals in Abidjan. The study was carried out over a period of twenty-four years (1984-2007). The variables studied were: frequency, age, histological type and prognosis. **Results:** Genital cancers in women accounted for 41.28% (n = 2491) of cancer in women and 21% of cancers. The average age of patients was 46.65 years (range 2 - 88 years). The cervix (82.85%) was the main location followed by the ovary (8.6%). Histologically, carcinomas (92.93%) were the most common types of sarcomas. Cervical cancers were diagnosed at an average age of 47.36 years (range 2 to 88 years). Carcinomas were the predominant histological type (92.88%) with 57.4% (n = 450) diagnosed at pT2N0M0 stage. The average age of patients bearing ovarian cancer was 39.13 years (range 8 to 82 years). Common malignant epithelial tumours were the most common histological type (57.48%) (n = 123) followed by non-Hodgkin lymphoma (14.95%). **Conclusion:** Genital cancers in women are common and poorly prognosed in Côte d'Ivoire. The adoption of a policy of routine screening is needed to improve the prognosis of these tumours.

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## Keywords

Cancer, Genital, Women, Epidemiology-Histology-Côte d'Ivoire

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### 1. Introduction

Long considered as the *plague* in developed countries, cancer is now a public health problem in developing countries with additional difficulties related to too much more delayed diagnosis [1]. This scourge is said to be responsible for approximately 13% of mortality worldwide with almost three-quarters of deaths in countries with lower intermediate income [2]. In sub-Saharan Africa, cancer mainly affects young subjects in a context of scarce resources and effective means of support. Women are the particularly affected subjects in this part of the world. According to recent studies, the female predominance varies from 51.21% to 54.9% of cases [3]-[5]. The location at the genital area is very frequent due to the combination of different etiologic factors such as the existence of several infectious factors, often responsible for precancerous lesions and malignant tumour growths. In Côte d'Ivoire, female genital cancers are constantly diagnosed, but undervalued because of the absence of a national screening policy and the shortage of diagnostic facilities [6]. In conducting this work, we aimed at describing the epidemiological and pathological features of these cancers in our country in order to design strategies aiming at supporting patients.

### 2. Materials and Methods

This is a retrospective descriptive study of genital cancer in women collected from two pathology laboratories of university hospitals of Treichville and Cocody (Abidjan). The study period was 24 years (from January 1984 to December 2007). The samples examined were mainly composed of biopsies and surgical specimens fixed in 10% formalin and processed according to the usual techniques of paraffin embedding, microtome cutting and staining with hematoxylin-eosin. When necessary, some additional dyes were useful to confirm the diagnosis. Sometimes re-reading some blades was necessary to assess the in-depth invasion of the tumor. The immunohistochemical techniques sometimes required for diagnosis, were carried out in France or in the Maghreb countries. The parameters studied were the relative frequency, age, location, type differentiation and pTNM prognosis classification.

### 3. Results

#### 3.1. Frequency

From 1984 to 2007, we worked on 139,542 samples and diagnosed 11,854 cancers; which was a frequency of 8.5% of cases. Genital cancers in women represented 41.28% (n = 2491) of cancer among women and 21.01% of all cancers patients together (men and women). The annual incidence was 103.79 cases with a peak in 1991 (n = 137).

#### 3.2. Age

Patient's average age at the moment of the diagnosis was 46.65 years, ranging from 2 years to 88 years. The peak incidence was noted with patients from 45 to 54 years with a percentage of 29.1% (n = 726). The breaking down of ages is illustrated in **Figure 1**.

#### 3.3. Location

The most common locations were the cervix (2064 cases; 82.85%) and ovary (214 cases; 8.6%). Different seats are illustrated in **Figure 2**.

#### 3.4. Histological Aspects

Their frequency and seats are reported by **Table 1**. Carcinomas represented 93% (n = 2315) of histological

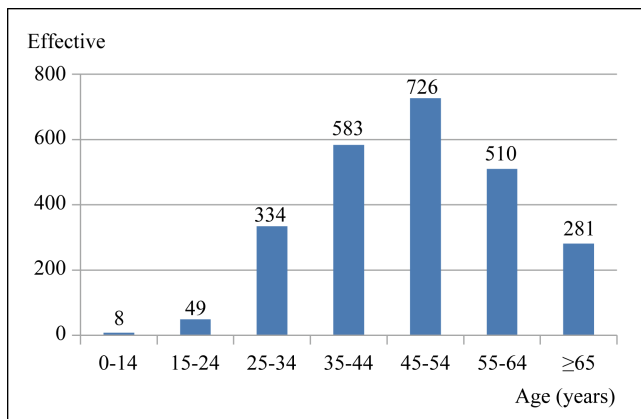


Figure 1. Distribution according to age groups.

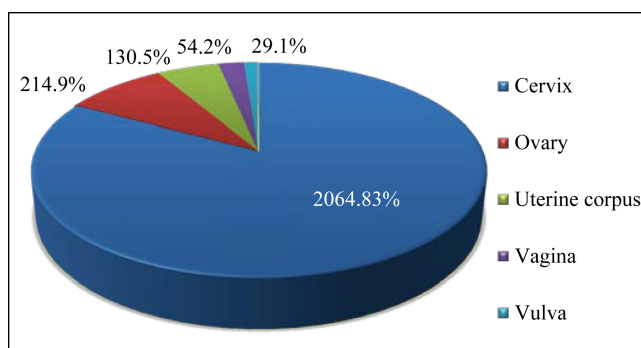


Figure 2. Distribution by seat.

Table 1. Distribution of seats according to histological types.

Histological types	Seats					Total and percentage
	Cervix	Ovary	Uterine corpus	Vagina	Vulva	
Carcinoma	2022	125	88	52	28	2315 (93%)
Sarcoma	35	3	42	2	-	82 (3.29%)
Lymphoma	6	32	-	-	-	38 (1.51%)
Germ cell tumour	-	30	-	-	-	30 (1.2%)
Mesenchymal and sex cord tumour	-	24	-	-	-	24 (0.96%)
Melanoma	1	-	-	-	1	1 (0.04%)
Total	2064	214	130	54	29	2491

types. Sarcomas and other histological types were observed in 7% (n = 176) of cases.

## 4. Analysis by Site

### 4.1. Cervical Cancers

They accounted for 82.85% (n = 2064) of genital cancers in women, 34.2% of cancers in women and 17.41% of all cancers. The average age of patients was 47.36 years, ranging from 2 years to 88 years. The peak frequency was observed within the age intervals 45 - 54 (29.1% of cases). A histological examination, ulcerative budding

tumors were predominant, with a frequency of 79.43% of cases (n = 888) followed by polypoid lesions (9.21%), ulcerative bleeding (6.17%) and indurated (5.19%). Squamous cell carcinomas observed in 92.88% of cases (n = 1917) followed by adenocarcinoma (5.04%). **Table 2** shows the distribution of histological types depending on age. Invasive squamous cell carcinoma represented 95.1% (n = 1832) of squamous cell carcinomas and were diagnosed at an average age of 49 years (range 16 to 88 years). The prognosis (WHO 2002) of these squamous cell carcinomas were of 57.4% (n = 450) of pT2N0M0, 33.6% (n = 263) of pT1N0M0, 6.6% (n = 51) pT3N0M0 and 2.4% (n = 18) of pT3-4N1Mx. Micro-invasive forms (0.57% of cases) were diagnosed at an average age of 41.5 years. As for intra-epithelial carcinomas, they represented 4.33% of cases (n = 83) with a mean age of 46.8 years. We also observed 10 cases of squamous cell carcinoma associated with HIV/AIDS in subjects under age 20.

## 4.2. Ovarian Cancers

Frequency was 8.6% (n = 214) of cancers of the reproductive system of women, 3.79% of female cancers and 1.8% of cancers in the study period. Ovarian cancers were positioned on the 6th most common cancer in women after cervical cancer (36.41%), breast cancer (13.69%), skin cancer (11.56%), hematopoietic and lymphatic tissue (7.32%) and stomach cancer (4.61%). The average age of patients was 39.13 years, ranging from 8 years to 82 years. Epithelial tumours (57.48%) were the most common histological types followed by non-Hodgkin's lymphoma (14.95%) with 81.25% of Burkitt's lymphoma (n = 26). The distributions of histological types depending of age are presented in **Table 3**.

Epithelial tumours had a peak incidence between 45 and 54 years (33.33% of cases). Non-Hodgkin lymphomas were dominant in the age group of 15 to 24 years with 81.25% of cases (n = 26). Germ cell tumors were also common from 0 to 24 years with 50 % of cases (n = 15). Besides, we noticed an association of ovarian cancer (cystadenocarcinoma in buds) with a seeping canalling carcinoma in two patients aged 46 and 54.

## 4.3. Uterine Corpus Cancers

With 5.2% of cases (n = 130), uterine corpus cancers represented 2.15% of cancers in women and 1.1% of all cancers. They were observed in patients whose age ranged from 27 years to 81 years with an average of 51.63 years. The peak frequency was observed within the age intervals 55 - 64 (45.6%). Endometrial cancers had a frequency of 3.85% of cancers of the female genital area. They were diagnosed at an average age of 57.63 years (range 27 to 81 years). Adenocarcinomas (91.67%), sarcomas of the endometrium (5.21%) and malignant mixed tumors were histological types. Myometrial cancers had a frequency of 1.36% of female genital cancers and 0.45% of all malignant tumors. Subjects 45 to 54 years were the most affected with a mean age of 47 years.

**Table 2.** Relationship between histological types and age.

Age (years)	Histological types								Total
	SCC	ADK	MN	RMS	NHL	KS	M	HPM	
0 - 14	-	-	-	3	1	-	-	-	4
15 - 24	19	-	-	2	1	-	-	-	22
25 - 34	242	15	2	3	1	3	1	1	269
35 - 44	477	26	4	1	1	1	-	-	511
45 - 54	562	37	7	1	-	1	-	-	613
55 - 64	392	13	4	1	1	-	-	-	411
≥65	219	13	2	1	-	-	-	-	235
Total	1917	104	19	12	5	5	1	1	2064
Percentage	92.88	5.04	0.92	0.58	0.24	0.24	0.05	0.05	100

Note: SCC: Squamous cell carcinoma; ADK: Adenocarcinoma; MN: Mixed neoplasm; RMS: Rhabdomyosarcoma; KS: Kaposi's sarcoma; M: Melanoma; HPM: Haemangiopericytoma.

**Table 3.** Distribution of histological types, depending on the age.

Age (years)	Histological types						Total
	CET	LNH	GCT	SST	S	C	
0 - 14	-	10	8	-	-	-	18
15 - 24	6	16	7	2	2	-	33
25 - 34	19	4	7	5	-	-	35
35 - 44	25	-	4	6	-	-	35
45 - 54	41	1	3	6	1	-	51
55 - 64	22	-	1	4	-	1	28
≥65	11	1	-	1	-	1	14
Total	123	32	30	24	3	2	214
Percentage	57.48	14.95	14.02	11.21	1.4	0.93	100

Note: CET: Common epithelial tumour; NHL: Non-Hodgkin's lymphoma; GCT: Germ cell tumour; SST: Stromal and sex cord tumour; S: Sarcoma; C: Carcinoid.

Histologically, leiomyosarcomas (79.41%), rhabdomyosarcoma (8.82%), mulleroblastoma (5.88%), fibrosarcoma (2.94%) and a mixed malignancy were observed (2.94%).

#### 4.4. Vaginal Cancers

They represented 2.17% (n = 54) of cancers of the reproductive system of women, 0.9% of cancers in women and 0.45% of cancers. The average age was 42.93 years, with a peak incidence between 44 and 54 years (31.5%), range from 18 to 73 years. Histologically, squamous cell carcinoma accounted for 87.03% (n = 47), followed by adenocarcinoma (9.26%) and embryonic rhabdomyosarcoma of botryoid deviation (3.71%).

#### 4.5. Vulva Cancers

These cancers had a frequency of 1.16% (n = 29) of genital cancer in women, 0.48% of cancer in women and 0.24% of all malignancies. The average age of patients was 53.35 years (range 24 to 78 years) with a peak incidence between 55 and 64 years (53.7%). The main histological types were: squamous cell carcinoma (89.65%), one case of Bowen's disease (3.45%), one case of carcinoma of the Bartholin gland (3.45%) and one case of malignant melanoma (3.45%).

### 5. Discussion

Genital cancers in women play an important role in cancer pathology in the developing countries. In sub-Saharan Africa, the frequencies are in the range of 22.7% to 38.2% of cancers in women [1] [3] [4] [7]. Our frequency of 41.28% confirms the high levels in this region. In contrast, in developed countries, the rates turned weaker in the last fifty years due to more appropriate health policies. Indeed, in these countries, there are cancer screening strategies allowing early treatment of precancerous lesions [3] [8]. In our series, the age of patients is growing from 20 years to reach a peak incidence between 45 and 54 years (29.1%). Then, there is a gradual decrease from 55. This peak frequency is explained by the natural history of precancerous lesions which is usually done between 10 to 20 years.

The cervical cancer is ranked first genital cancer in women in Côte d'Ivoire as observed in many African series [9] [10]. At the epidemiological level, about 500,000 new cases are detected each year including 80% of cases in developing countries, making this a type of cancer a real problem of public health. The age of onset in most developing countries is usually between 45 and 52 years [9] [11] [12], as opposed to developed countries where women over 55 are the most affected [8]. The prevalence among young women in low-income countries is related to the existence of numerous risk factors (genital infection, multiple partners etc.) and the lack of screening policy. Indeed, cervical infection with Human Papilloma Virus serotypes which are: 16, 18, 31 and 45,

is the main risk factor. Its role is well established in the process of carcinogenesis starting from cervical infection with low-grade dysplasia and high-grade carcinoma in situ and invasive and [13] [14]. Other sexual and non sexual factors also act as cofactors in the progression of HPV infection toward cancer. It has to do with early unprotected sex, tobacco consumption, multi-sexual partner, cervix and vaginal recurrent infections, multiple pregnancies and immunodeficiency (HIV, renal transplantation) [13] [14]. Very early cases are also observed in our collected data. These are subjects under age 20 in which the association with HIV infection/AIDS is observed. These early forms are also reported in African literature [15]. According Mandelblatt *et al.* [16], the combination of these two oncogenic viruses (HIV and HPV) is responsible for the amplification process of carcinogenesis with a risk of early development of cervical cancer. Histologically, the predominance of squamous cell carcinoma was observed in African and Western literature [8] [17]. Intraepithelial and well differentiated forms are rare in our study. This reflects a lack of early care and especially the lack of routine screening, as evidenced by the advanced macroscopic aspects (ulcerative budding and infiltrating) observed at the macroscopic study. The improved prognosis remains a priority for many women increasingly younger since the occurrence of HIV/AIDS. The implementation of a program involving management of HIV/AIDS and immunization against HPV would hopefully be a starting point for the eradication of these cancers in our country.

The ovarian cancers are also topical in our country, but less common than cervical cancer. However, diagnosis is difficult as well as patients' support due to their deeper area of occurrence. The incidence rates of these cancers are highly variable globally. They are twice lower (3 to 5/100,000 habitants) in developed countries than in developing countries (13/100,000) but the rates of mortality and morbidity are particularly higher in Africa [18] [19]. Indeed, deficits in health facilities, personnel and technical equipment (ultrasound and scan CT) shortage are responsible [20] [21]. In the present study, ovarian cancers are diagnosed at any age with an average age of about 40 years and a peak incidence between 45 and 54 years. These results show a common achievement of youth in contrast to African and Western literatures that find a higher average age, from the 5th decade of life to the 8th decade of life subjects [20]-[22]. Risk factors for ovarian cancer are: nulliparity, family history of ovarian cancer (Li-Fraumeni syndrome) and genetic factors associated with BRCA1 or BRCA2 gene mutations [22]. The observation of ovarian cancer associated with breast cancer in patients of our study is evidence that cancers are epidemiologically related in the Ivorian subjects. Histologically, epithelial tumors are the most frequent (57.48% of cases). This predominance is found in the literature with higher proportions (70% to 94%) [15] [22]. Non-Hodgkin lymphomas are also common in our series. They represent about 20% of histological types including 81.26% of Burkitt lymphomas. Indeed, Burkitt's lymphoma is a fairly common disease which affects school age subjects [23]. Einstein Barr Virus and *Plasmodium falciparum* are recognized as contributing factors to this lymphoma [23]. Its pathogenesis is characterized at the molecular level by three possible translocations: t(8, 14) (most frequent), the t(2, 8) and t(8, 22) which put the c-myc oncogen (in this chromosome 8) in dependence on the heavy chain genes (chromosome 4) or light (chromosome 2 or 22) of immunoglobulins. They lead to overexpression of the c-myc oncogen. The melt activate the c-myc improperly and stimulate the cell cycle namely mature B cells [24]. Ovarian locations represent the second site of Burkitt's lymphoma in Côte d'Ivoire after mandibular localization [23]. Its high rate amongst young women in our series as well as frequency of germ cell tumors may explain the prevalence of ovarian cancer in youngsters unlike other literature data [15] [22].

Uterine corpus cancers are rare in our study and characterized by a predominant localization in the endometrium (approximately 75% of cases). Our rate is stackable African values [1] [4]. However, this cancer is very common in advanced age subjects (post-menopausal) with a variable incidence according to continents. Regions of high risk are the countries in Central America, Europe and North America, with implications from 18 to 40 cases/100,000 people), while we recorded rates of less than 2.5 cases/100,000 people in West Africa [9] [25]. It is a hormon-dependent cancer whose risk factors are: obesity, nulliparity and early menopause [25]. The peak frequency observed in the age group of 54 and 64, is below the European and American standards 75 and 79 years [9] [26]. This difference is partly due to the low life expectancy in our country where the majority of the population is generally under age 25 years [6]. On the other hand, these cancers are undervalued because a large proportion of postmenopausal women live in rural areas where health centers are scarce.

Shortly diagnosed in our country, the vaginal cancers are cancers whose incidence is generally less than 1 cases/100,000 [20] [25]. Their frequency is estimated at about 3% of genital cancer in women [20] [25]. The highest rates are observed in Argentina and Colombia with an incidence generally higher than 1.2 cases/100,000 [20]-[26]. In our study, relatively young and postmenopausal women are affected. The presence of risk factors



such as genital infections Human Papilloma Virus, HIV, multiple partners, smoking and chronic adverse socio-economic conditions are also implicated [13]. Similarly, the predominance of the squamous cell carcinoma is related to these risk factors [27].

At the vulvar level, cancers are very rare. However, they share the same epidemiological and histological cancers of the vagina and cervix aspects. Other risk factors such as diabetes, obesity, hypertension and atherosclerosis are reported more risk factors, especially in developed countries but also in developing countries where the living standard in large cities tend to be westernized [25].

## 6. Conclusion

Genital cancers in women are common in Côte d'Ivoire and mainly affect young people. The cervical cancer, the most common is a real public health problem. The absence of a national screening policy, the high frequency in subjects which are increasingly younger, and the poor prognosis should cause government's awareness. The implementation of a national screening policy must take into account the training of health workers, equipment, hospitals and sensitization of population. Such an action can only be effective through the integration of routine vaccination of girls against HPV infection. An inclusive care within the reproductive health framework must also take into account other genital cancers. The contribution of diagnostic tools (ultrasound, scan CT, cytopathology, and histology) and treatment (radiotherapy, chemotherapy, targeted therapy) is valuable and crucial to the implementation of such projects in our country.

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